Affine Transformation

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Geometric Transformation

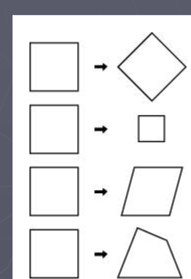
- *The process of using a set of control points and transformation equations to register a digitized map, a satellite image, or an aerial photograph onto a projected coordinate system.*
- This process is necessary for data display or analysis in a GIS project.

Types of Geo Transformation

- Map-to-map: converts a newly digitized map into real world coordinates.
- Image-to-map: converts the rows and columns of a satellite image into real-world coordinates. (georeferencing)

Transformation Methods

- Equiarea-preserves shape & size
- Similarity-preserves shape
- Affine-preserves parallelism
- Projective-allows angular & length distortions



- By default ArcMap supports 3 types (affine, similarity, and projective).

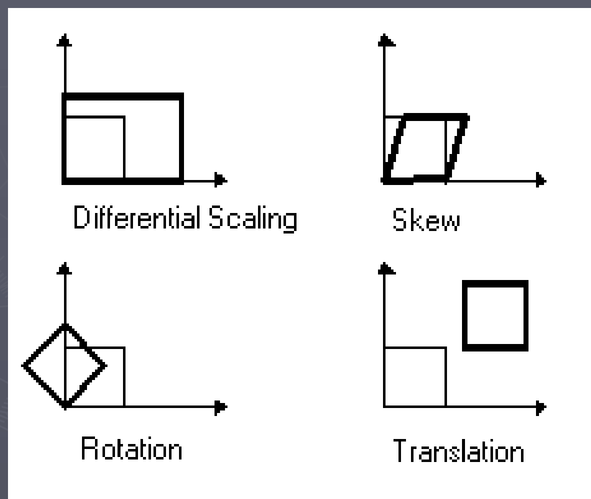
Affine Transformation

- A geometric transformation method that allows rotation, translation, skew, and differential scaling on a rectangular object, while preserving line parallelism

Affine Transformation

- Rotation: rotates the object's x- and y- axes from origin.
- Translation: shifts its origin to a new location.
- Skew: allows a non-perpendicularity between the axes, thus changing its shape to a parallelogram with a slanted direction.
- Differential scaling: changes the scale by expanding or reducing in the x- and/or y- direction.

Affine Transformation



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